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DEPARTMENT OF ECOLOGY

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February 11, 1994

TO: Flora J. Goldstein

FROM: Guy J. Gregory

SUBJECT: Technical Evaluation: North End Delisting Petition, Nature and Extent of Contamination and Future Planned Remedial Investigation Activities, Pasco Sanitary Landfill

On January 14, 1994, Ecology received a petition requesting delisting of a portion of the Pasco Sanitary Landfill Site. Pasco Sanitary Landfill is located just northeast of the city of Pasco, (Figure 1). The petition was filed on behalf of Pasco Sanitary Landfill, Inc. (PSL) for purposes of removing that portion of the site currently operated by New Waste, Inc. The petitioner states that, "as a result of the stigma associated with the new landfill cell's location within the boundaries of an HSL [Hazardous Sites List] site, potential customers are unwilling to use this state-of-the-art facility."

This document is neither a review of the specifics of this petition nor a recommendation regarding its merits. Rather, it is a summary of technical information available for the portion of the site proposed for delisting up to the time of completion of the Phase I Remedial Investigation (Phase I RI), and a statement of probable and possible future remedial actions in the area. The Phase I RI was conducted under Agreed Order No. DE 92TC-E105 between Ecology and twenty-nine Potentially Liable Parties (PLPs) at the site.

Documentation for this analysis, if not attached, is included in the administrative record for the facility. This record is located at Ecology's Eastern Regional Office, 4601 N. Monroe Street, Spokane, WA 99205-1295.

Proposed Delisting Area

The area proposed for delisting is in Section 15, T9N, R30E W.M.. It includes all PSL owned properties in that section except for the SW¼ of the SW¼ of Section 15. Figure 2 indicates the area, drawn

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Background

During the Phase I RI (BEI, 1993) the Pasco Sanitary Landfill ceased accepting waste. Several factors forced this interim closure, most prominently that the landfill had reached its permitted capacity. PSL formed a subsidiary in 1992, New Waste Inc. (NWI), to establish and operate a new lined facility on property owned by PSL to replace the old municipal landfill. Figure 2 illustrates the location of all landfills and waste management areas on site.

Following consultation with Ecology in 1991 and 1992, PSL and then NWI agreed to restrict their expansion plans to the northern end of the property. Ecology recommended this course of action at that time because available information did not suggest significant waste management activities had been conducted in that area. Also, given the known ground water flow direction, establishment of a landfill in that area would be unlikely to interfere with remedial actions at the site. The agency felt that remedial activities would most likely be concentrated on the southern portion of the landfill property, near old waste disposal sites.

In late 1992, Ecology met with representatives of NWI and the Pasco PLP group to review all aerial photography in our collective possession. Aerial photographs for the site are available for the period from early 1960's through the present. The objectives of this meeting were: Establish locations for surface soil and subsurface soil borings near known waste management areas; and establish a likely site for area background. A review of all air photographs revealed little evidence of vehicular traffic north of the sludge management area. No information, including interviews, have led Ecology or PLP group representatives to conclude that waste management activities ever occurred on this parcel.

As a follow up to that meeting, I walked the site with the objective of observing evidence of excavation or vehicular traffic. Soil tests were being conducted during this time by NWI's consultant for purposes of landfill siting, but no evidence of significant historic traffic was found. Traffic could indicate landspreading of liquid or low viscosity wastes, for example. No traces of former burial sites could be seen.

NWI proceeded with design and construction of a lined municipal solid waste landfill on this parcel in early 1993. Site characterization activities included geotechnical soil sampling; limited chemical sampling, and installation of five new monitoring wells: NW-1 through NW-5.

The Benton-Franklin Health District issued a permit for the operation of the New Waste Landfill on March 28, 1993 (BFDHD, 1993), with Ecology concurrence.

The Phase I RI field investigation began in late 1992. The PLPs proposed, and Ecology approved, an area to be sampled for purposes of defining chemical background for surface and subsurface soils in the RI. A population of twenty-one surface soil samples (BK-1 through 21) were taken to compare against samples taken from former landspreading areas (Figure 3). Three soil borings (B-09, B-09R, and B-10; Figure 4) were installed to provide preliminary background chemical profiles from the subsurface.

Soil chemical characterization

Summary soil chemical results are in Attachment 1. Detailed chemical information, including quality assurance/quality control (QA/QC) samples are contained in the Phase I RI report (BEI, 1993).

Surface soil samples were analyzed under Level IV QA/QC protocols for Pesticides and PCBs (EPA Method 8080), Herbicides (EPA Method 8150), Priority Pollutant Metals (EPA Method 6010), Radio chemicals (EPA Methods 900 and 900.1). All samples came from less than one (1) foot in depth.

Soil borings B-9, B-9R and B-10 were analyzed by the same methods for the same chemicals, plus Volatile Organic Compounds (EPA Method 8240). The borings yielded samples at roughly 5 foot intervals from the surface to 50' below ground surface. Boring B-9 was abandoned at 10'; B-9R replaced B-9.

The results from surface soil samples represent site background for the analyzed chemicals. The results show no chemicals at levels of concern to human health and the environment using MTCA Method B [WAC 173-340-740(3)(a)(iii)] risk assumptions. Metals are within accepted values for crustal abundance; organics were not detected.

Ground Water Chemical Characterization

Site monitoring wells are shown on Figure 5. Attachment 2 is a summary of the latest submittal (November 1993 data) from NWI's consultant for Wells NW-1 through NW-5 (Technico, 1994). Chemical results are similar in all respects to all quarterly results for these wells.

Ground water Wells NW-1 through NW-5 were installed in 1993 during construction of the New Waste Landfill. Four rounds of samples are now available from these wells. They are sampled quarterly for constituents defined in Chapter 173-351 WAC, Appendices I and II. These are the same constituents required under RCRA Subtitle D, the federal municipal landfill regulation.

The only other well that lies downgradient from this area is Well No. 7. This well is slightly downgradient from the extreme north end of the sanitary landfill. Well No. 7 has a slightly lower specific conductance than other wells on site, at 580 umhos/cm versus a sitewide general average on the order of 600 umhos/cm. Samples taken quarterly since December 1990 have detected no organic chemicals. Sampling for the Phase I RI, subject to a rigorous QA/QC program, detected no organic chemicals. It appears from historic data that Well No. 7 has not been affected by waste management activities.

The data from all potentially affected wells fail to demonstrate chemical impacts in ground water from either current landfill operations or past waste practices.

Conclusions

Investigations to date in the area proposed for delisting from the Pasco Sanitary Landfill facility have not indicated need for further remedial action under Chapter 173-340 WAC. Impacts to human health cannot be demonstrated through comparison of site chemical data with MTCA Method B values for soil. Ground water and soil data from the area petitioned for delisting appear to be representative of site and area background.

Ecology will not focus remedial investigation efforts in this portion of the site. The Phase I RI clearly indicates substantial environmental and public health impacts exist at the facility. These impacts can be generally associated with areas of past waste management activities. No evidence indicates such actions took place in the area proposed for delisting. Data from the Phase I RI and prior performance and characterization sampling do not justify further expenditure of resources in investigation of potential releases on this portion of the facility.

The area will continue to be monitored. Quarterly ground water samples are required under existing BFDHD permits and Chapter 70.95 RCW, the state solid waste management law. They require:

- ongoing quarterly detection monitoring of wells NW-1 through NW-5 for purposes of compliance with the Benton-Franklin Health District solid waste landfill operating permit;

- quarterly performance monitoring of Well No. 7 for purposes of the Benton-Franklin Health District interim closure permit, applicable to the former Pasco Sanitary Landfill.

Future actions may be done under MTCA authority. Remedial actions which may be appropriate or are otherwise contemplated for this portion of the facility include:

- soil-gas characterization along the north end of the former Pasco Sanitary Landfill;

- collection of additional soil samples in the surface and subsurface to establish site background chemical concentrations;

- construction and maintenance of a upgradient ground water location; and

- establishment of a borrow area for soils to incorporate into the final closure cap of the former Pasco Sanitary Landfill.

Delisting of the site would not affect the utility of this area for these purposes.

References Cited

Burlington Environmental, Inc (BEI), 1993: Final Draft, Phase I Remedial Investigation Report, Pasco Landfill, Pasco, Washington

Benton-Franklin District Health Department (BFDHD), 1993: Solid Waste Disposal Construction Permit No. 93-930; Issued to New Waste, Inc.

EMCON Northwest, Inc., 1992: New Waste Landfill Permit Application and Supporting Documentation; Submitted to BFDHD

Technico Environmental Services., 1993: New Waste Landfill Water Quality Results

GJG:adw

Attachments

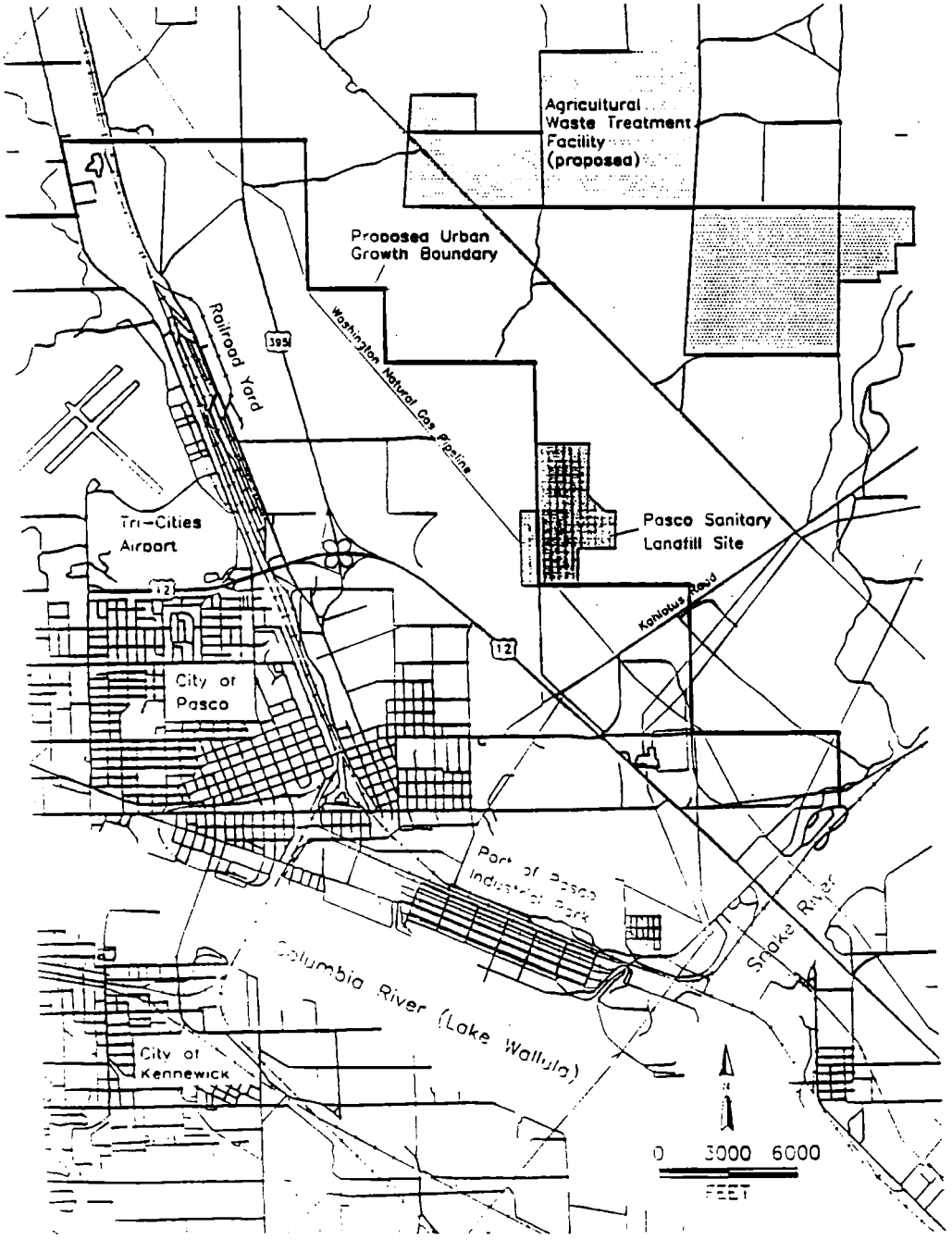

Figure 1: Location, Pasco Sanitary Landfill

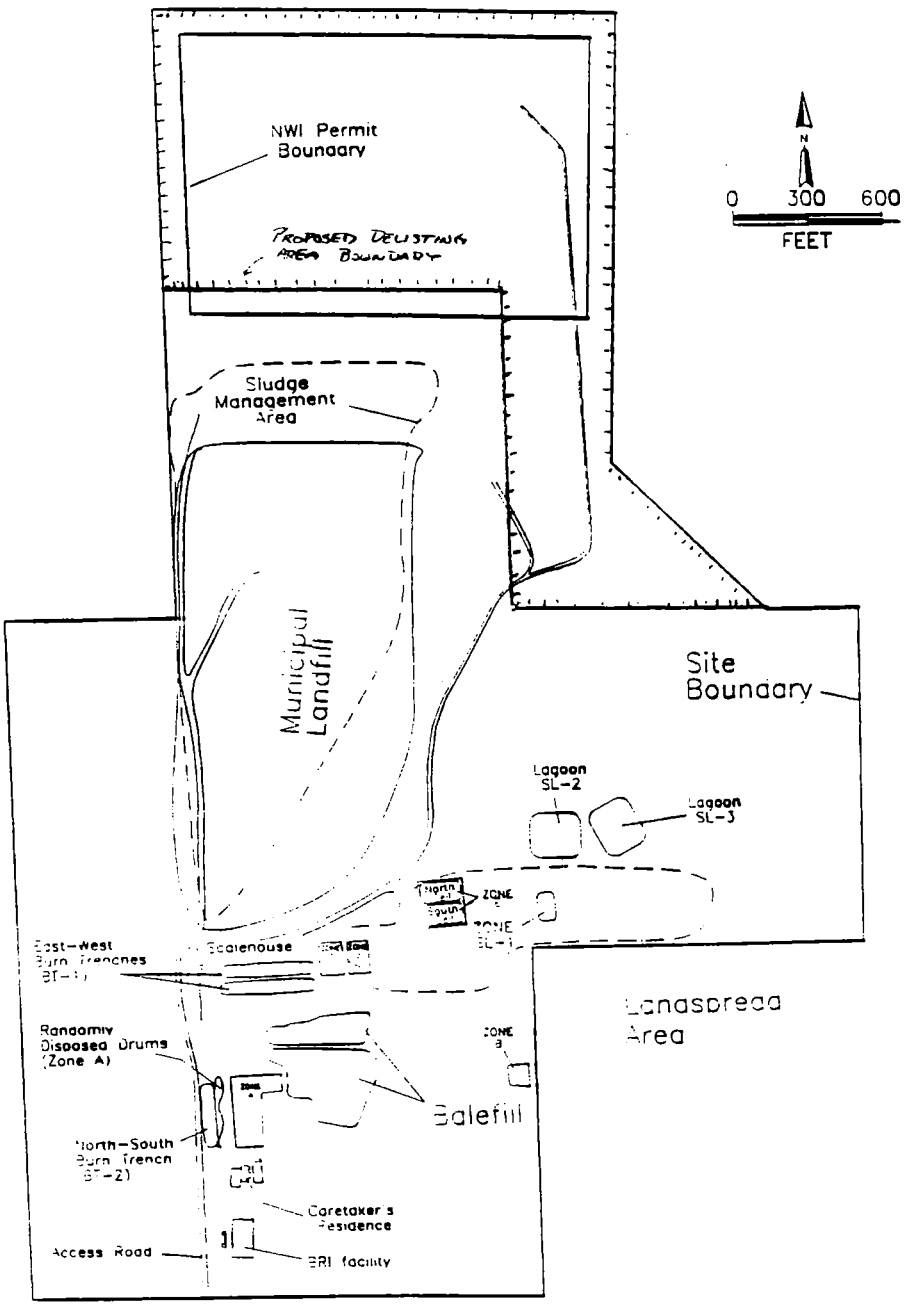

Figure 2: Landfills and Former Waste Management Areas

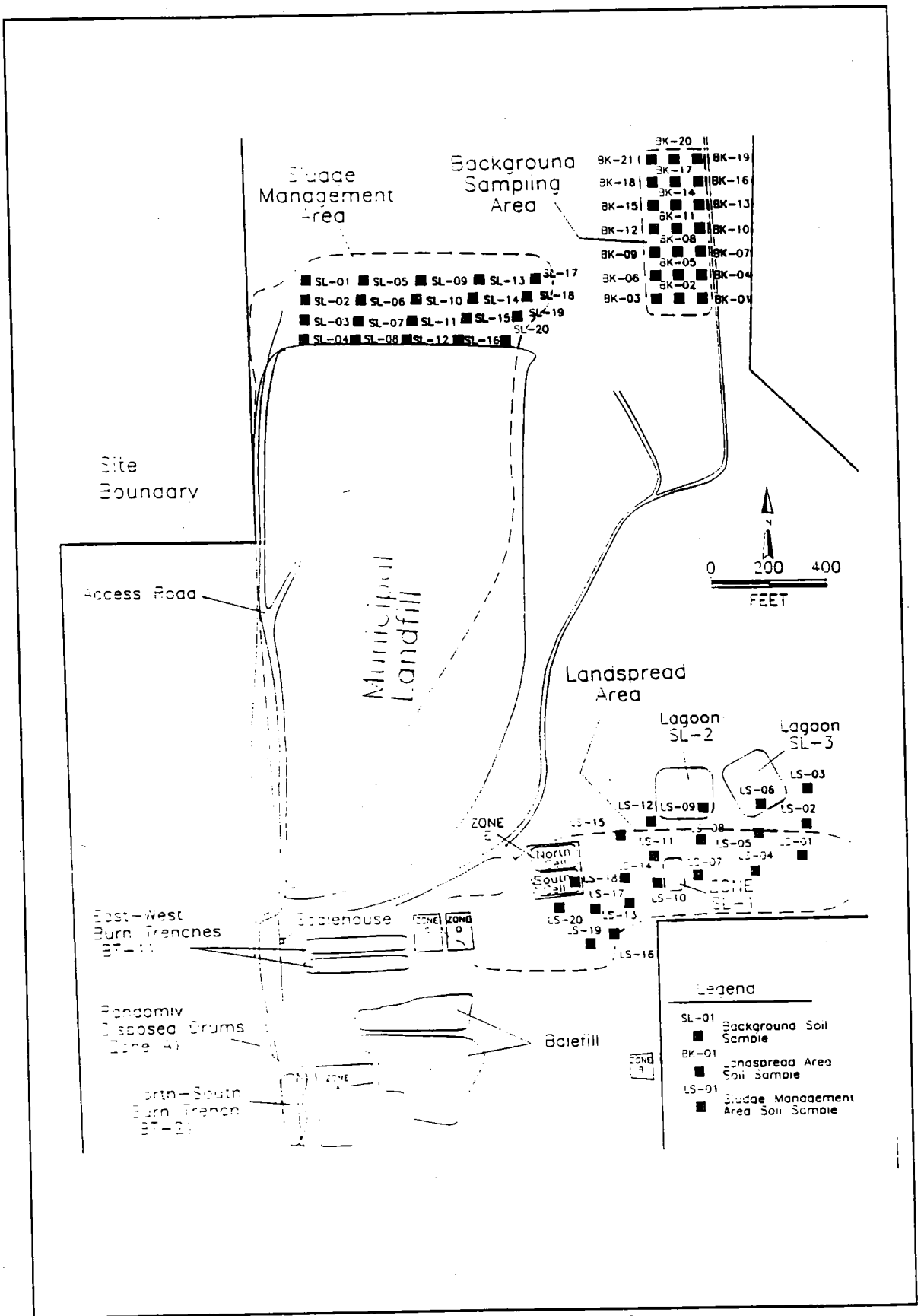

Figure 3: Background Surface Soil Sample Locations

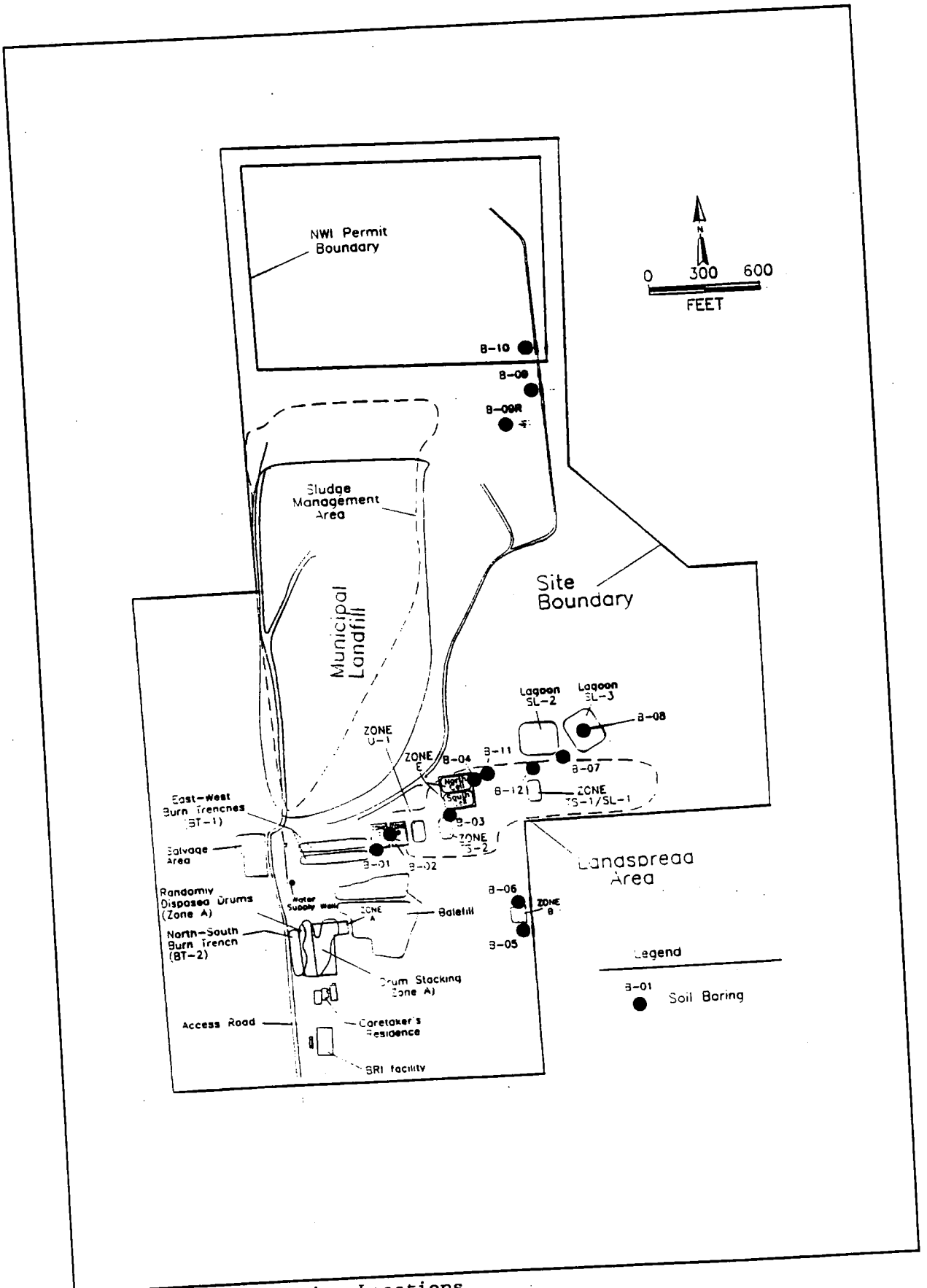

Figure 4: Soil Boring Locations

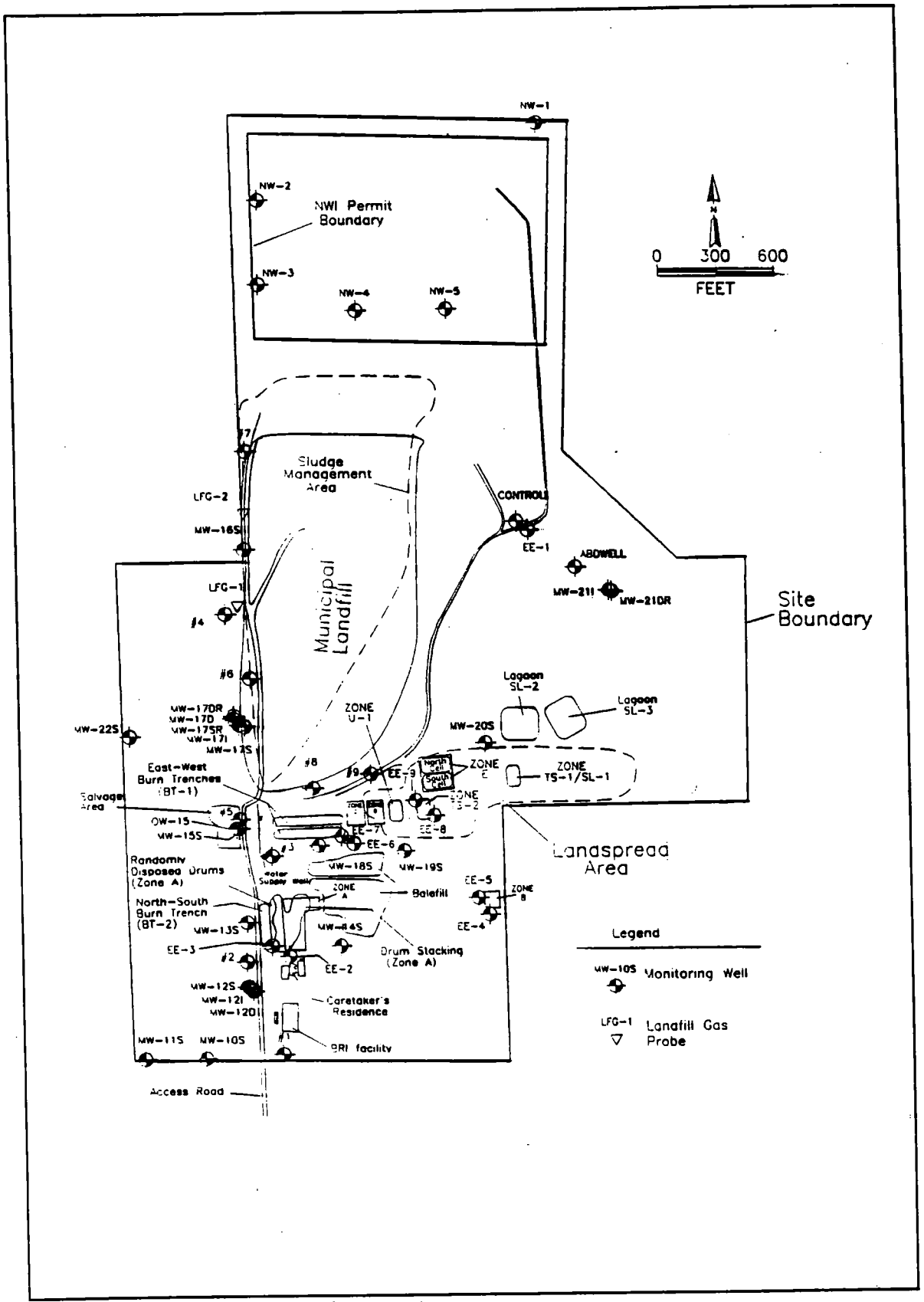

Figure 5: Facility Well Locations

Attachment 1
Summary Soil Chemical Results (BEI, 1993)

TABLE 5-3a

Background Area
Detected Analytes Summary
Pesticides and PCBs
Surface Soils
Pasco Landfill

SITE	DATE	DEPTH	4,4'-DDE ug/kg
BK-05	12/03/92	0.5	4.4 J
BK-12	12/03/92	0.5	3.8 J

< = Not detected at indicated reporting limit --- = Not sampled and/or analyzed All values represent total concentrations unless noted

Hits only # = Highest of Multiple Results ??? = Duplicate Results

J - Estin J value

TABLE 5-3b

Background Area
Detected Analytes Summary
Priority Pollutant Metals
Surface Soils
Pasco Lanfill

SITE	DATE	DEPTH	Pb mg/kg	Hg mg/kg	Ni mg/kg	Ag mg/kg	Sb mg/kg	As mg/kg	Cd mg/kg
BK-01	12/03/92	0.5	8.7	<0.09	9.1	1.2	<1.3	7.1	1.9
BK-02	12/03/92	0.5	7.2	<0.09	8.8	1.3	<1.1	8.4	2
BK-03	12/03/92	0.5	7.3	<0.10	9.7	1.3	<1.3	7	2
BK-04	12/03/92	0.5	7.5	<0.09	8.3	1.4	3.6 B	4.4	1.7
BK-05	12/03/92	0.5	9.1	<0.09	8.8	1.3	<1.2	5.7	1.9
BK-06	12/03/92	0.5	7.9	0.53	8.5	1.3	<1.2	5.8	1.6
BK-07	12/03/92	0.5	8.1	<0.08	8.3	1.5	<1.1	6.7	1.6
BK-08	12/03/92	0.5	7.1	<0.09	8.5	1.3	<1.1	6	1.8
BK-09	12/03/92	0.5	7.4	<0.07	9.4	1.4	<1	7.8	1.9
BK-10	12/03/92	0.5	6.6	<0.08	8.3	1.5	<1.1	6.4	1.7
BK-11	12/03/92	0.5	6.4	<0.08	7.5	0.83	1.7 B	5.8	1.5
BK-12	12/03/92	0.5	6.5	<0.08	7.8	0.86	2.4 B	5.8	1.5
BK-13	12/03/92	0.5	6.2	<0.09	7.7	0.86	2.5 B	5.1	1.5
BK-14	12/03/92	0.5	5.5	<0.08	7	0.83	2 B	5.3	1.5
BK-15	12/03/92	0.5	5.8	<0.08	7.4	0.81	2.6 B	5.7	1.5
BK-16	12/03/92	0.5	7.2	<0.09	7.7	0.95	2.3 B	5.7	1.5
BK-17	12/03/92	0.5	8.5	<0.09	8.9	0.97	<1.1	7.3	1.5
BK-18	12/03/92	0.5	7.3	<0.08	8.2	0.93	3.2 B	6.5	1.7
BK-19	12/03/92	0.5	7.4	<0.08	9.7	1.3	<1.2	8.7	2
BK-20	12/03/92	0.5	7.2	<0.08	9.4	1	3.3 B	6.8	2
BK-21	12/03/92	0.5	6.4	<0.07	9.2	1	1.5 B	6.2	1.8

< = Not detected at indicated reporting limit --- = Not sampled and/or analyzed All values represent total concentrations unless noted

Hits only # = Highest of Multiple Results ??? = Duplicate Results

B - Estimated value

TABLE 5-3b

Background Area
Detected Analytes Summary
Priority Pollutant Metals
Surface Soils
Pasco Lanfill

SITE	DATE	DEPTH	Cr mg/kg	Cu mg/kg	Zn mg/kg
BK-01	12/03/92	0.5	5.9	10.3	33.4
BK-02	12/03/92	0.5	6.2	11.9	34.3
BK-03	12/03/92	0.5	6.3	11.5	36.3
BK-04	12/03/92	0.5	6.1	10.5	32.9
BK-05	12/03/92	0.5	6.6	10.4	36.8
BK-06	12/03/92	0.5	6.2	10.7	34.5
BK-07	12/03/92	0.5	5.9	10.9	34.8
BK-08	12/03/92	0.5	6.1	10.1	34.2
BK-09	12/03/92	0.5	7	11.6	36.2
BK-10	12/03/92	0.5	6.5	10.2	35.0
BK-11	12/03/92	0.5	5	8.8	31.9
BK-12	12/03/92	0.5	5.1	8.4	29.5
BK-13	12/03/92	0.5	5.5	8.6	32
BK-14	12/03/92	0.5	4.6	7.8	27.7
BK-15	12/03/92	0.5	4.8	8.1	29.5
BK-16	12/03/92	0.5	5.5	8.4	32.4
BK-17	12/03/92	0.5	6.2	9.9	34.7
BK-18	12/03/92	0.5	5.9	9.5	35.4
BK-19	12/03/92	0.5	7.1	12.2	39.7
BK-20	12/03/92	0.5	5.4	13.4	36.7
BK-21	12/03/92	0.5	5.9	10.6	35.9

< = Not detected at indicated reporting limit --- = Not sampled and/or analyzed All values represent total concentrations unless noted

Hits only * = Highest of Multiple Results ??? = Duplicate Results

B - Estin J value

TABLE 5-3c

Background Area
Detected Analytes Summary
Radiochemical Data
Surface Soils
Pasco Landfill

SITE	DATE	DEPTH	Gross Alpha pci/g	Beta particle and photon radioactivity pci/g	K-40 pci/g	Ac-228 pci/g	Bi-214 pci/g	Tl-208 pci/g	Th-234 pci/g
BK-01	12/03/92	0.5	8.3±7.4 2P	23±5 2P	14±2 2P	0.6±0.2 2P	0.5±0.1 2P	0.22±0.4 2P	<0.14 2P
BK-02	12/03/92	0.5	17±9 2P	28±5 2P	15±2 2P	<0.10 2P	0.5±0.1 2P	0.2±0.1 2P	<0.14 2P
BK-03	12/03/92	0.5	23±10 2P	30±5 2P	16±2 2P	0.7±0.2 2P	0.5±0.1 2P	0.3±0.1 2P	<0.14 2P
BK-04	12/03/92	0.5	14±8 2P	26±5 2P	14±2 2P	0.7±0.2 2P	0.5±0.1 2P	0.3±0.1 2P	<0.15 2P
BK-05	12/03/92	0.5	20±8 2P	26±5 2P	15±2 2P	<0.11 2P	0.4±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-06	12/03/92	0.5	10±6 2P	19±4 2P	16±2 2P	<0.11 2P	0.5±0.1 2P	0.22±0.4 2P	<0.14 2P
BK-07	12/03/92	0.5	23±8 2P	21±4 2P	15±2 2P	0.9±0.2 2P	0.5±0.1 2P	0.2±0.1 2P	<0.14 2P
BK-08	12/03/92	0.5	16±8 2P	26±4 2P	16±2 2P	0.8±0.2 2P	0.4±0.1 2P	0.25±0.4 2P	<0.13 2P
BK-09	12/03/92	0.5	14±8 2P	25±4 2P	14±2 2P	0.8±0.2 2P	0.5±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-10	12/03/92	0.5	21±9 2P	21±4 2P	14±2 2P	0.8±0.2 2P	0.5±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-11	12/03/92	0.5	11±8 2P	24±4 2P	15±2 2P	0.6±0.1 2P	0.4±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-12	12/03/92	0.5	10±8 2P	24±4 2P	15±2 2P	0.6±0.1 2P	0.4±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-13	12/03/92	0.5	15±7 2P	22±4 2P	16±2 2P	0.8±0.2 2P	0.4±0.1 2P	0.17±0.4 2P	<0.13 2P
BK-14	12/03/92	0.5	8.5±7.5 2P	26±4 2P	13±2 2P	0.6±0.1 2P	0.5±0.1 2P	0.2±0.1 2P	1.3±0.2 2P
BK-15	12/03/92	0.5	22±9 2P	23±4 2P	14±1 2P	0.6±0.1 2P	0.3±0.1 2P	0.2±0.1 2P	1.3±0.2 2P
BK-16	12/03/92	0.5	10±8 2P	22±4 2P	15±2 2P	0.6±0.2 2P	0.4±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-17	12/03/92	0.5	18±8 2P	25±4 2P	16±2 2P	0.7±0.2 2P	0.5±0.1 2P	0.3±0.1 2P	<0.13 2P
BK-18	12/03/92	0.5	19±7 2P	21±4 2P	14±2 2P	0.5±0.2 2P	0.5±0.1 2P	0.2±0.1 2P	<0.12 2P
BK-19	12/03/92	0.5	21±8 2P	23±4 2P	12±2 2P	0.7±0.2 2P	0.5±0.1 2P	0.2±0.1 2P	<0.13 2P
BK-20	12/03/92	0.5	14±8 2P	18±4 2P	10±2 2P	0.5±0.1 2P	0.4±0.1 2P	0.2±0.1 2P	<0.12 2P
BK-21	12/03/92	0.5	10±8 2P	20±4 2P	16±2 2P	<0.12 2P	0.5±0.1 2P	0.2±0.1 2P	<0.13 2P

< = Not detected at indicated reporting limit --- = Not sampled and/or analyzed All values represent total concentrations unless noted

Hits only # = Highest of Multiple Results ??? = Duplicate Results

2P - Confidence interval = 95.5% (two sigma)

TABLE 5-3c

Background Area
Detected Analytes Summary
Radiochemical Data
Surface Soils
Pasco Landfill

SITE	DATE	DEPTH	Pb-214 pci/g	Pb-212 pci/g	PB-210 pci/g	Bi-212 pci/g	U-235 pci/g
BK-01	12/03/92	0.5	0.5 ± 0.1 2P	0.5 ± 0.1 2P	<0.09 2P	<0.15 2P	<0.06 2P
BK-02	12/03/92	0.5	0.5 ± 0.1 2P	0.7 ± 0.1 2P	<0.11 2P	<0.15 2P	<0.06 2P
BK-03	12/03/92	0.5	0.6 ± 0.1 2P	0.6 ± 0.1 2P	<0.09 2P	<0.14 2P	<0.06 2P
BK-04	12/03/92	0.5	0.6 ± 0.1 2P	0.7 ± 0.1 2P	<0.09 2P	<0.19 2P	<0.06 2P
BK-05	12/03/92	0.5	0.5 ± 0.1 2P	0.6 ± 0.1 2P	<0.10 2P	<0.16 2P	<0.06 2P
BK-06	12/03/92	0.5	0.6 ± 0.1 2P	0.6 ± 0.1 2P	<0.10 2P	<0.16 2P	<0.06 2P
BK-07	12/03/92	0.5	0.6 ± 0.1 2P	0.6 ± 0.1 2P	<0.10 2P	<0.13 2P	<0.06 2P
BK-08	12/03/92	0.5	0.5 ± 0.1 2P	0.7 ± 0.1 2P	<0.09 2P	<0.17 2P	<0.06 2P
BK-09	12/03/92	0.5	0.5 ± 0.1 2P	0.7 ± 0.1 2P	<0.11 2P	<0.18 2P	<0.06 2P
BK-10	12/03/92	0.5	0.5 ± 0.1 2P	0.6 ± 0.1 2P	<0.10 2P	<0.13 2P	<0.05 2P
BK-11	12/03/92	0.5	0.6 ± 0.1 2P	0.9 ± 0.1 2P	<0.10 2P	1.5 ± 0.1 2P	0.7 ± 0.2 2P
BK-12	12/03/92	0.5	0.7 ± 0.1 2P	0.9 ± 0.1 2P	<0.11 2P	1.5 ± 0.1 2P	0.7 ± 0.2 2P
BK-13	12/03/92	0.5	0.8 ± 0.1 2P	0.7 ± 0.1 2P	1.1 ± 0.1 2P	0.5 ± 0.3 2P	<0.07 2P
BK-14	12/03/92	0.5	0.3 ± 0.1 2P	1 ± 0.1 2P	<0.09 2P	0.8 ± 0.3 2P	<0.06 2P
BK-15	12/03/92	0.5	0.3 ± 0.1 2P	0.7 ± 0.1 2P	<0.09 2P	0.8 ± 0.3 2P	<0.06 2P
BK-16	12/03/92	0.5	0.4 ± 0.1 2P	0.6 ± 0.1 2P	<0.09 2P	<0.21 2P	<0.05 2P
BK-17	12/03/92	0.5	0.6 ± 0.1 2P	0.9 ± 0.1 2P	<0.12 2P	<0.23 2P	<0.07 2P
BK-18	12/03/92	0.5	0.4 ± 0.1 2P	0.5 ± 0.1 2P	<0.08 2P	<0.20 2P	<0.06 2P
BK-19	12/03/92	0.5	0.5 ± 0.1 2P	0.7 ± 0.1 2P	<0.10 2P	<0.22 2P	<0.05 2P
BK-20	12/03/92	0.5	0.4 ± 0.1 2P	0.5 ± 0.1 2P	<0.08 2P	<0.17 2P	<0.06 2P
BK-21	12/03/92	0.5	0.5 ± 0.1 2P	0.6 ± 0.1 2P	<0.09 2P	<0.22 2P	<0.06 2P

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Hits only * = Highest of Multiple Results ??? = Duplicate Results

2P - Con ...ice interval = 95.5% (two sigma)

Attachment 2
Summary Water Quality Results (Technico, 1993)

Table 3

Appendix I - Inorganic Constituents

New Wells 1-5

Date	Lab	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Lead (mg/L)	Nickel (mg/L)	Nitrate (mg/L)	Selenium (mg/L)	Silver (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
NEW WELL 1 IN November	Laucks	*0.006*	*0.020*	0.061	*0.001*	*0.001*	0.012	*0.005*	0.002	*0.005*	0.004	8.0	*0.020*	*0.001*	*0.020*	0.018	0.003
NEW WELL 2 IN November	Laucks	*0.006*	*0.020*	0.060	*0.001*	*0.001*	0.006	*0.005*	0.003	*0.005*	*0.002*	8.6	*0.020*	*0.001*	*0.020*	0.016	0.002
NEW WELL 3 IN November	Laucks	*0.006*	*0.020*	0.059	*0.001*	*0.001*	0.009	*0.005*	0.004	*0.005*	0.003	8.4	*0.020*	*0.001*	*0.020*	0.017	0.004
NEW WELL 4 IN November	Laucks	*0.006*	*0.020*	0.059	*0.001*	*0.001*	0.006	*0.005*	0.0019	*0.005*	*0.002*	7.8	*0.020*	*0.001*	*0.020*	0.017	0.003
NEW WELL 5 IN November	Laucks	*0.006*	*0.020*	0.052	*0.001*	*0.001*	0.007	*0.005*	0.002	*0.005*	*0.002*	7.9	*0.020*	*0.001*	*0.020*	0.017	0.003
Maximum Mean		**0.006**	**0.020**	**0.061**	**0.001**	**0.001**	**0.012**	**0.005**	**0.004**	**0.005**	**0.004**	**8.500**	**0.020**	**0.001**	**0.020**	**0.018**	**0.004**
DW MCL's		NONE	0.05	1.00	NONE	0.01	0.05	NONE	NONE	0.05	NONE	10	0.01	0.05	NONE	NONE	NONE
Mean < DW MCL			TRUE	TRUE		TRUE	TRUE			TRUE		TRUE	*TRUE**	TRUE			
GWQ Criteria		NONE	0.05	1.00	NONE	0.01	0.05	NONE	1.00	0.05	NONE	10	0.01	0.05	NONE	NONE	NONE
Mean < GWQ Criteria			TRUE	TRUE		TRUE	TRUE		TRUE	TRUE		TRUE	*TRUE**	TRUE			

NOTE: ITALICS (0.010) ARE LESS THAN VALUES.

MCL'S ARE WAC 246-290 PRIMARY DRINKING WATER STANDARDS

TRUE - LAB DETECTION LIMIT IS MORE THAN MCL AND GWCQ*

GROUNDWATER QUALITY STANDARDS ARE WAC 173-200-040 GROUNDWATER QUALITY CRITERIA

Table 4
Appendix II Parameters New Wells 1-5

		Field Parameters				Geochemical Indicator Parameters													
						Cations						Anions					Leachate		
Date	Lab	pH	Specific Conductivity	Temperature °C	Static Water Level	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Iron (Fe)	Manganese (Mn)	Bicarbonate (HCO3)	Alkalinity (as CaCO3)	Chloride (Cl)	Sulfate (SO4)	Nitrate	Ammonia (NH3-N)	Total Organic Carbon (TOC)	Total Dissolved Solids (TDS)
Well 1 November 1993	Laucks	7.50	500	15.0	360.55	55	22	34	6.80	0.130	0.003	170	0	24	63	8.0	*0.01*	1.8	390
Well 2 November 1993	Laucks	7.90	500	14.0	357.63	54	21	33	6.60	0.086	*0.002*	170	0	27	67	8.6	*0.01*	2.0	390
Well 3 November 1993	Laucks	7.40	500	14.0	356.79	55	22	34	6.70	0.250	0.005	170	0	29	68	8.4	*0.01*	1.9	360
Well 4 November 1993	Laucks	7.00	500	15.0	357.86	54	22	33	6.7	0.095	0.002	170	0	24	64	7.8	*0.01*	1.8	340
Well 5 November 1993	Laucks	7.30	400	14.0	360.29	54	22	33	6.7	0.11	0.005	170	0	28	65	7.9	*0.01*	2.30	330
Maximum Mean		**7.90**	**500.00**	**15.00**	**360.55**	**55.00**	**22.00**	**34.00**	**6.80**	**0.25**	**0.01**	**170.00**	**0.00**	**29.00**	**68.00**	**8.60**	**0.01**	**2.30**	**390.00**
	DW MCL'S	NONE	700.00	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
Mean < DW MCL			TRUE			TRUE													
GWQ Criteria		6.5-8.5	NONE	NONE	NONE	NONE	NONE	NONE	NONE	0.30	0.05	NONE	250.00	250.00	NONE	NONE	NONE	NONE	NONE
Mean < GWQ Criteria		TRUE								TRUE	TRUE		TRUE	TRUE					
NOTE: ITALICS (0.010) ARE LESS THAN VALUES.					MCL'S ARE WAC 246-290 PRIMARY DRINKING WATER STANDARDS														
					GROUNDWATER QUALITY STANDARDS ARE WAC 173-200-040 GROUNDWATER QUALITY CRITERIA														

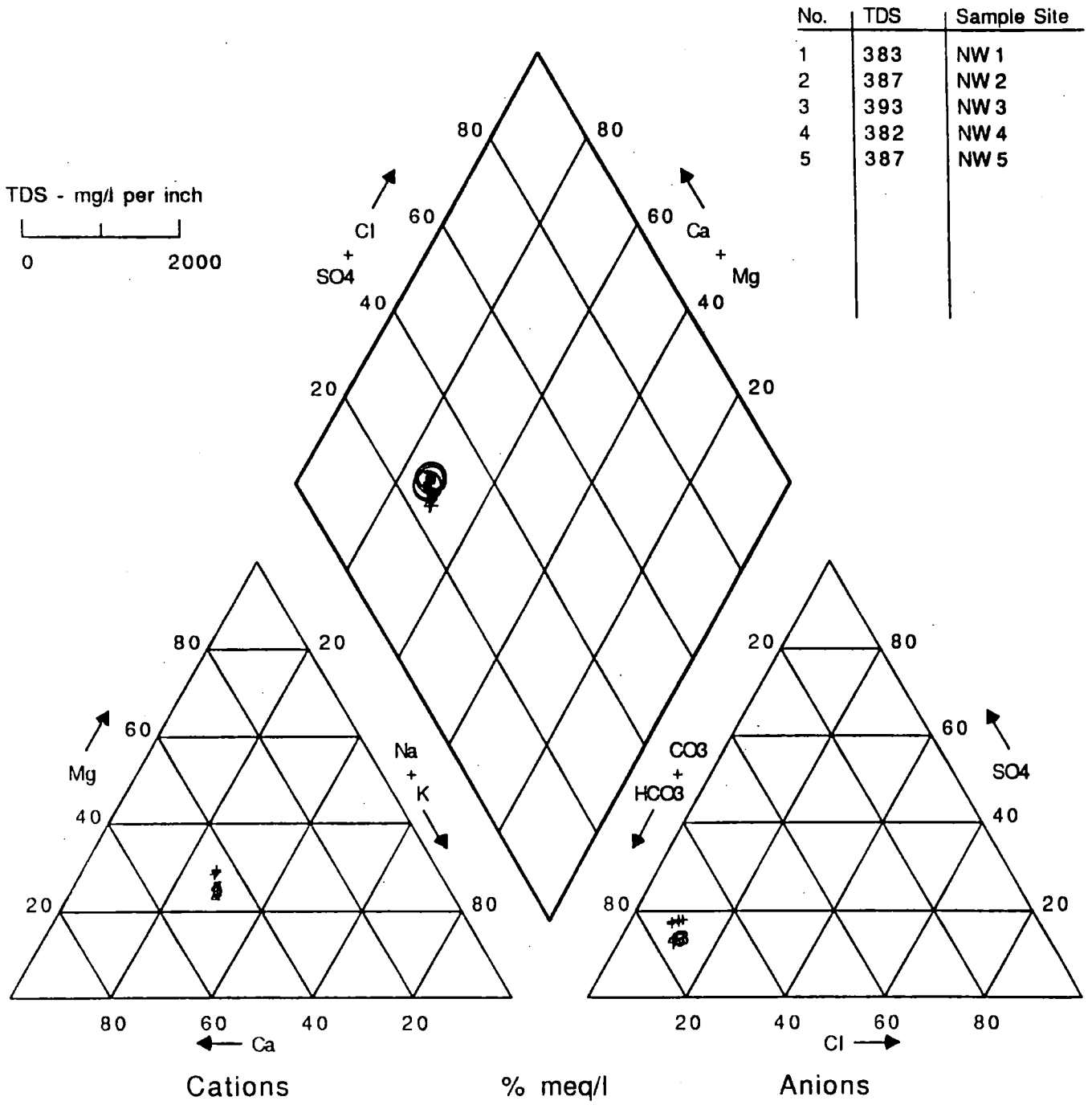

Figure 1
Piper Diagram
New Waste Landfill Wells 1-5

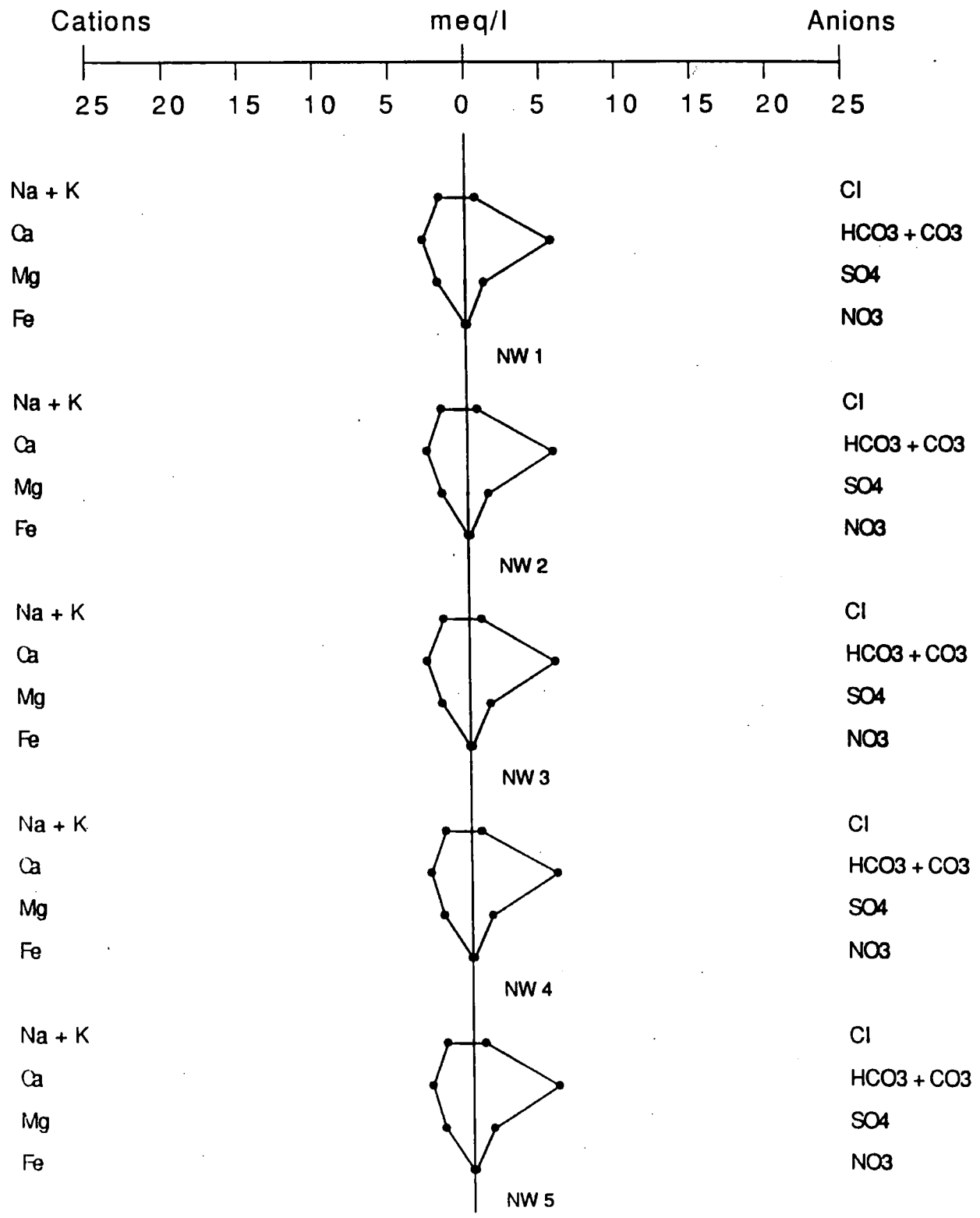

Figure 2
Stiff Diagram
New Waste Landfill Wells 1-5